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Third generation mobile communication in Germany

Impact of the chosen regulatory and legislative framework on
market dynamics and analysis of potential amendments of the
underlying legal conditions and their implications

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1 Introduction

Third generation mobile communication is of great importance in terms of world wide connectivity, the mobile phone being the preferred voice device for hundreds of millions of people.

Third generation mobile communication is used as an expression to describe not only the services but also the underlying technology.

In terms of services, it means an increase in the provision of both services and capacity, whereas the development from first to second generation mobile communication resulted mainly in enhancing the transmission capacity of voice with smaller added services like SMS (Short Message Service), fax and event notifications. Third generation mobile communication provides a wide range of services, inter alia, voice, e-mail, database access and information services, financial services, images and sound files and video telephony.

In terms of technology, third generation mobile communication describes the technological means by which the fast conveyance of voice, data, video and sound is made possible.

The development of third generation mobile communication in Germany is strongly linked with the European development. The European Parliament and the Council decided in 1998 on the coordinated introduction of a third-generation mobile and wireless communications system comprising compatible networks and services in the Community.¹ This decision is legally binding to all member states in all its parts. Consequently, in 2000, the German Regulatory Authority for Telecommunications and Posts (RegTP) set out rules for the award of licences and for the conduct of the Auction for the Award of UMTS/IMT 2000 Licences, which took place in a two step procedure. The first auction was designed to allocate licences together with paired spectrum frequencies, while the second auction aimed at allocating additional capacity, i.e., unpaired spectrum among those bidders that already received paired spectrum. Finally, the outcome of the auction produced six licensees: four GSM (Global System for Mobile Communication) incumbents and two new entrants. The proceeds for the German government were approximately €50bn in total, a record sum higher than in any other European country.

¹ *Decision No 128/1999/EC of the European Parliament and of the Council of 14 December 1998 on the co-ordinated introduction of a third-generation mobile and wireless communications systems (UMTS) in the Community*, OJ L 017, 22 January 1999, p. 26.

This essay aims to analyse the implications of Germany's legislative and regulatory framework on the third generation mobile market in order to determine possible solutions to the various problems that arise from these conditions.

German operators face among other difficulties the problem of debt as they paid huge licence fees to the German government to be part of the "3G game" in the expectation of high rates of return. The high level of indebtedness has limited if not restricted some of the German operators' ability to invest in the required UMTS technology. Recently, in 2002, two of the licensees - Mobilcom and Quam - have announced that they will not further invest in third generation mobile communication as they realised that the chosen business models are not adequate to meet the UMTS reality. The legal implications of this withdrawal for the licence will be examined. Consequently, questions of consolidation become obvious.

Some of the regulatory conditions restrain operators in their flexibility to address these problems efficiently. The main issues are:

- mergers between licensees are forbidden, if one licensee has a dominant position on the relevant market. In the case of a merger one licence has to be returned because the accumulation of licences within one entity is forbidden.
- limited possibility for infrastructure sharing due to the licence requirement of competitive independence of licensees and the functions control concept, i.e., legal and operational independence of networks
- spectrum trading is generally not allowed under the current telecommunications legislation
- the provision of capacity to MVNOs is not forbidden but also not encouraged by RegTP

The essay will provide a brief introduction to third generation mobile technology, since its understanding is especially important with regard to infrastructure sharing.

Subsequently, the essay will examine both the legislative and regulatory framework for third generation mobile communication and the UMTS/IMT 2000 licence conditions imposed on the six German operators, in order to demonstrate their impact on market dynamics in terms of market structure and development.

As most of the German operators are highly indebted, inter alia, as a consequence of the huge licence fees, there might be a need to amend the licence conditions if their interpretation is not sufficient to address the raised issues.

Finally, the essay will examine co-operation possibilities such as infrastructure sharing agreements, spectrum trading and the concept of Mobile Virtual Network Operators (MVNOs) under the German legislative and regulatory regime.

Although this work focuses on German Law, other jurisdictions will be considered where appropriate. Moreover, the new Telecommunications Ministerial Draft Bill will be adequately accounted for.

2. Technology²

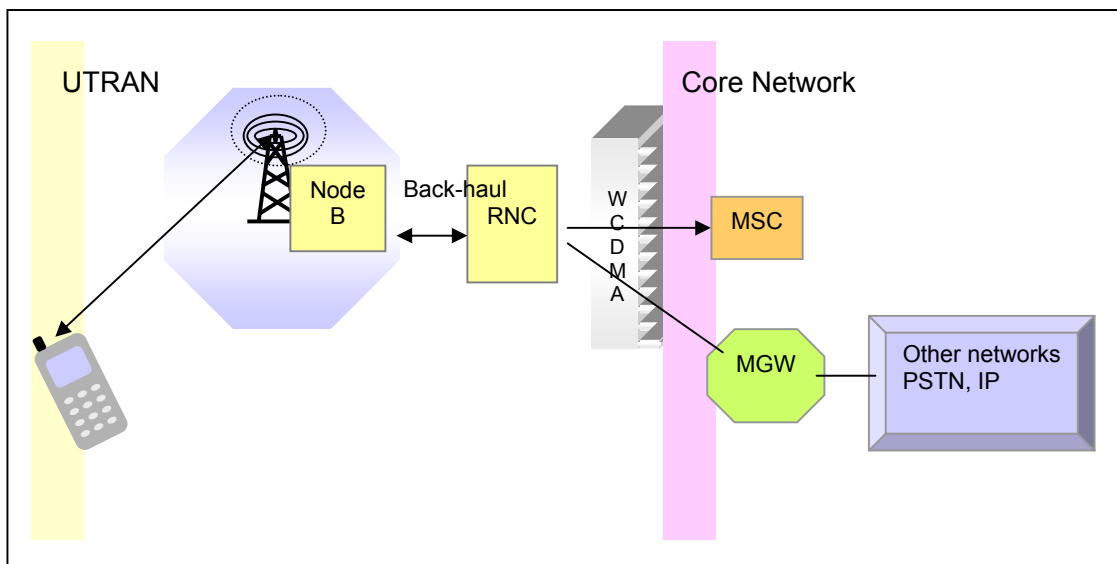
Third generation mobile communication embodies the convergence of voice telephony, data transfer and multimedia. One single device enables the user to make both voice and video calls, to produce and send pictures and videos, navigate the Internet and compose e-mails.

UMTS is one of the six standards of the IMT-2000 standards family which were agreed on by the ITU (International Telecommunications Union) in 1999. IMT refers to International Mobile Telecommunications and 2000 stands for the newly licensed frequency band in which 3G will operate.

An UMTS network consists of three main elements as shown in figure 1:

- UMTS radio access network (UTRAN)
- Core network
- Interface between the UTRAN and the core network.

Figure 1: **UMTS Network**



The UTRAN comprises the handset, the Node B and the radio network controller (RNC). The Node B handles the communication with and control of the mobile handset converging data/voice to and from the radio interface and measuring the quality and strength of the

² This chapter is based on: Modoff, B T et al, *The Rise of the 3G Empire, Even Rome had its bad days*, Deutsche Bank Securities Inc., May 2002, pp. 18-35, 53-57.

connection. The RNC manages the handovers between cell sites, the radio resources, the operation and maintenance of each cell. Transfer of voice and data traffic between the Node B and the RNC is dealt with by the backhaul. The backhaul refers to the physical part of a mobile network, e.g., fibre optic cable, that is used to transport voice and data traffic between the Node B and the RNC.

The core network is located behind the RNC and consists of the mobile switching centre (MSC) which will be fully replaced by the media gateway (MGW) that is being currently added to the core network and the gateways. The MSC considers the allocation and administration of radio resources during a call. Its basic function is the switching of voice and data traffic between RNCs other MSCs and non-mobile networks. The gateways constitute the entrance points to other networks. MGWs are located at the boundary of different networks like PSTN (public switched telephone network) and IP-networks (internet protocol) and are used for the conversion of different transmission technologies by providing protocol conversion and voice encoding/decoding.

WCDMA (wide code division multiple access) is the radio interface technology for UMTS, which uses much wider radio channels than those used by 2G mobile communication.

3. Legislative and Regulatory Framework in Germany

The regulatory framework of Germany's telecommunications sector and hereby the UMTS issues are governed by two major blocks: legislation and regulation. This chapter will look at the UMTS-related legislative and regulatory tools with the aim to analyse their impact on market dynamics. Propositions for amendments of the underlying conditions, especially in light of the current economic situation of the German UMTS licensees, will be set out.

3.1 Legislation

For the purposes of this essay, the Telecommunications Act 1996 (Telekommunikationsgesetz - TKG) and several ordinances adopted on the basis of this Act form the relevant legislative authorities. Competition Law is particularly relevant with regard to dominant mobile operators. Furthermore, European law plays a very important role with respect to UMTS.

3.1.1 Telecommunications Law

The primary legislative authority in the telecommunications sector is the Telecommunications Act 1996.³

As a piece of public law, the Telecommunications Act 1996 draws the basic distinction between private business activity and the duties of the state to guarantee universal services.⁴ Moreover, the liberalisation of the formerly monopolistic German telecommunications sector, dominated by Deutsche Telekom, has been concluded with guidance from the European Union through the implementation of several liberalisation Directives. These aimed at opening up the market by removing all special and exclusive rights in respect of terminal equipment and telecommunications services. Additionally, harmonisation Directives complemented the liberalisation measures by establishing the principle of Open Network Provision⁵ and its applicability to leased lines⁶ and voice telephony services⁷. The aim was to provide open access to publicly available telecommunications networks and services on a harmonised basis.

³ A new Telecommunications Act 1996 is awaited mid 2003 due to the implementation of the new regulatory framework for electronic communications networks and services.

⁴ Piepenbrock, H-J & Schuster F (eds.), *German Telecommunication Law and the New European Regulatory Framework*, Dr. Otto Schmidt, Köln, 2002. pp. 47-48.

⁵ "ONP Framework Directive", *Council Directive 90/387/EEC of 28 June 1990 on the establishment of the internal market for telecommunications services through the implementation of open network provision*, OJ L 192, 24 July 1990, pp. 0001-0009.

⁶ "Leased Lines Directive", *Council Directive 92/44/EEC of 5 June 1992 on the application of open network provision to leased lines*, OJ L 165, 19 June 1992, pp. 0027-0036.

⁷ "ONP Voice Telephony Directive", *Directive 95/62/EC of the Parliament and of the Council of 13 December 1995 on the application of open network provision (ONP) to voice telephony*, <http://europa.eu.int/ISPO/infosoc/legreg/docs/9562ec.html> (27 May 2003).

The Interconnection Directive⁸ and the Licensing Directive⁹ completed the harmonisation package by taking into account the emerging competitive environment.

The legislative purpose of the Telecommunications Act 1996 under § 1 TKG is to promote competition through the regulation of the telecommunications sector, to guarantee the proliferation of appropriate and adequate services throughout the country and to provide for frequency regulation. Telecommunications and frequency regulation is a sovereign task of the state, as ruled by § 2 section 1 TKG. The most important aims¹⁰ of regulation are:

- the ensuring of equal-opportunity and workable competition
- the guaranteeing of full coverage with telecommunication services at affordable prices – universal services and
- the efficient and interference-free use of frequencies.

Equal opportunity competition refers to better market entry opportunities for competitors which finally leads to the promotion of workable competition.¹¹

Workable competition is not defined by the Telecommunications Act 1996. Nevertheless, its meaning cannot be derived solely from Competition Law¹², because the latter perceives competition as an originary status, which needs to be protected against restraints, rather than as a status which has to be created in the first place.¹³ In terms of telecommunications law, workable competition means a competition that fulfils its functions, i.e., efficient means of production, free choice, through structural secured regulation, so that competition prevails after deregulation.¹⁴ The mobile telecommunications sector has an oligopolistic structure that allows a relatively high level of competition.

The efficient and interference-free use of frequencies is secured by the specific frequency usage licence conditions.

⁸ Directive 97/33/EC of the European Parliament and of the Council of 30 June 1997 on interconnection in Telecommunications with regard to ensuring universal service and interoperability through application of the principles of Open Network Provision (ONP), OJ L 199, 26 July 1997, pp. 0032-0052.

⁹ Directive 97/13/EC of the European Parliament and of the Council of 10 April 1997 on a common framework for general authorisations and individual licences in the field of telecommunications services, OJ L 117, 7 May 1997, pp. 0015-0027.

¹⁰ As stated in § 2 (2) TKG.

¹¹ Koenig C *et al*, Der Begriff des funktionsfähigen Wettbewerbs im deutschen Telekommunikationsrecht (2003) 1 *Kommunikation & Recht* 8-16, p. 13.

¹² Law Against Restraints of Competition.

¹³ Koenig C *et al*, n. 11, p. 9.

¹⁴ Koenig C *et al*, n. 11, p. 13.

Another important principle of German telecommunications law is the functions control concept as laid out in § 3 No. 1, 2 TKG. The operator of transmission lines must exercise de jure and de facto control of all functions that necessarily provide the implementation of information transmission on transmission lines. This shall also apply where transmission lines owned by third parties are used within the telecommunications network. The implications of this concept are especially important for the assessment of the extent to which infrastructure sharing between mobile network operators is legally admissible.¹⁵

The operation of UMTS infrastructure for third generation mobile communication services is regulated, in accordance with § 6 section 2 No. 1 a TKG, by means of a mobile communications licence, licence class 1.

Generally, applicants for a licence have an unlimited legal right to the award of a licence under § 8 (1) TKG as long as they fulfil the according conditions. In special circumstances like in a situation of scarcity of frequencies the number of licences can be limited under § 10 TKG, following a certain procedure by which the parties concerned are heard prior to the limitation decision and the decision is published in the Official Gazette of the regulatory authority. In this case, the legal right to the award of a licence is transformed to a legal right to participate in a non-discriminatory award procedure.¹⁶ As the range of UMTS/IMT 2000 frequencies was not sufficient for all applicants, the number of UMTS licences has been limited without specifying a certain number.¹⁷ After the publication of the limitation decision it was necessary - as stipulated in § 11 TKG - to perform an award procedure to decide whether the award of licences should be concluded by auction or by competitive bidding. After hearing the interested parties RegTP in co-operation with the Cartel Office (§ 82 S. 1 and 2 TKG) and in consultation with the Advisory Council (§ 73 (3) S. 2 TKG) published its decision for the award of licences by auction, under § 11 (4) TKG.¹⁸ The award of licences concluded following the procedure set out in § 8 TKG. As a result of the auction procedure six UMTS licences have been awarded.

The licence itself only gives a legal right for the operation of transmission lines as stated in § 6 TKG. It does not represent the automatic acquisition of frequencies.

A licence may be wholly or partially revoked in accordance with § 15 TKG, if:

¹⁵ More to this point in ch. 4.1.

¹⁶ Piepenbrock, H-J & Schuster F (eds.), n. 4, p. 99.

¹⁷ Piepenbrock, H-J & Schuster F (eds.), n. 4, p. 103.

¹⁸ RegTP Official Gazette No 9, 26 May 1999, Administrative Order 51/1999, pp. 1519-1530.

- the licensee does not fulfil the obligations arising from his licence or ensuing from this Act, violating in particular the secrecy of telecommunications, data protection regulations or penal provisions or
- a reason for denial according to § 8 (3) sentence 1 subparagraph 2 arises in respect of the licensee or in respect of the party having permission to use the licence in the cases of § 9 (2) of this Act.

Frequencies have to be assigned separately by RegTP under § 47 (1) TKG in accordance with the frequency usage plan in a non-discriminatory manner on the basis of comprehensible and objective procedures. In order to avoid a situation in which a licensee would have no frequencies RegTP included an assurance of frequency allotment on the basis of § 38 of the Administrative Procedures Act into the licence conditions.¹⁹

On the basis of the Telecommunications Act 1996 several ordinances also relevant to UMTS have been adopted to deal with numerous questions in more detail. In particular, frequency use contributions are charged subsequent to the roll out of the UMTS network by administrative act under the Frequency Use Contributions Ordinance. The Telecommunications Customer Protection Ordinance contains framework provisions for the use of telecommunications services for the public. It focuses on the special protection of users and consumers.

3.1.2 Competition Law

In addition to the Telecommunications Act 1996 the provisions of the Act against Restraints of Competition (GWB) also apply to the telecommunications sector as stated in § 2 (3) TKG. This becomes clear especially with respect to the protection against abuse of dominant market power, §§ 33 (1) TKG, 19 GWB. The relationship between these two Acts is characterised by their combined aim to prevent threats that occur from dominant telecommunications operators who abuse their dominant positions to the detriment of competitors and ultimately the consumers. While the Act against Restraints of Competition applies to general control, the Telecommunications Act 1996 applies to sector-specific control, e.g., ensuring the competitors' access to essential services on a non-discriminatory basis (§ 33 section 1 TKG).²⁰ As a result of the applicability of both Acts, RegTP and the Federal Cartel Office are governed by a relationship of co-operation. This co-operation is especially important for issues, such as the definition of product and geographic markets and market dominant positions (§ 82 TKG).

¹⁹ Model Licence A.3.1, n. 46.

²⁰ Piepenbrock, H-J & Schuster F (eds.), n. 4, pp.178-188.

Consequently, RegTP ruled per administrative order²¹ in agreement with the Federal Cartel Office that UMTS/IMT-2000 should be seen as a new relevant product market distinct from that of GSM. It also ruled that the territory of the Federal Republic of Germany will be the relevant geographic market.

As a superior law, European competition law applies to cases which may affect trade between member states. Art. 81 of the EC Treaty forbids cartels, whereas Art. 82 of the EC Treaty prohibits the abuse of a dominant position within the common market or a substantial part of it. The “Guidelines on the application of EEC competition rules in the telecommunications sector”²² are designed to clarify the applicability of Community competition rules in the telecommunications sector taking into consideration its special conditions.

3.1.3 European Law

European Law plays a significant role for the introduction of UMTS in Germany.

European Union regulation of mobile communications can be categorised into three main phases:

- Phase 1: harmonisation and standardisation of technology (1987-1992)
- Phase 2: general liberalisation of telecommunications services (1993-1995)
- Phase 3: full liberalisation of mobile telecommunications services and equipment (1996-2001).²³

Figure 2 below provides an overview of European Union regulation in the mobile communications sector.

²¹ RegTP Official Gazette, n. 18.

²² European Commission 91/C 233/02, OJ C 233, 6 September 1991, p. 2.

²³ Cf. McKinsey & Company, for the European Commission, *Comparative Assessment of the Licensing Regimes for 3G Mobile Communications in the European Union and their Impact on the Mobile Communications Sector*, final report, 25 June 2002, pp. 3-4 available under: http://europa.eu.int/information_society/topics/telecoms/radiospec/mobile/studies/index_en.htm (7 June 2003).

Figure 2: European Union mobile communications Regulation

Phase 1: 1987-1992 Harmonisation and Standardisation	Phase 2: 1993-1995 General Liberalisation	Phase 3: 1996-2001 Full Liberalisation
Green Paper of 1987		
Council Recommendation 87/371/EEC	Council Resolution 93/C213/01	Mobile Directive 96/2/EC
GSM Directive 87/372/EEC	Green Paper COM/94/145 final	Licensing Directive 97/13/EC
Terminal Directive 92/263/EEC	Council Resolution of 29 June 1995	Interconnection Directive 97/33/EC
		UMTS Introduction: 1997- 2001
		Communication COM/97/0513 final
		Decision No 128/1999/EC

The Green Paper of 1987²⁴ initiated the harmonisation and liberalisation of the telecommunications sector by identifying a set of principles for a regulatory framework towards full liberalisation by 1.1.1998/1.1.2001.²⁵ Technology harmonisation and the development of standards within the GSM technology were mainly governed by the Council Recommendation 87/371/EEC²⁶ and the GSM Directive²⁷. Their main objectives were to foster the economies of the EEC by the introduction of pan European mobile technology and services. In this phase the first GSM operators entered the market.²⁸ The Terminal Directive 91/263/EEC²⁹ dealt with the Europe-wide harmonisation of terminal equipment standards.

Subsequently, the second phase of regulation commenced with the adoption of Council Resolution 93/C213/01³⁰ and the Green Paper COM(94)145 final³¹. The main goal was the general liberalisation of telecommunications services. Although not directly applying to mobile services, these documents provided the basis for the further liberalisation of mobile services

²⁴ *Green paper on the Development of the Common Market for Telecommunications Services and Equipment*, COM(87)290 final, 30 June 1987.

²⁵ The second full liberalisation deadline was set to meet the needs of those countries within the EEC which were regarded as underdeveloped in the Telecommunications sector.

²⁶ *Council Recommendation 87/371/EEC of 25 June 1987 on the co-ordinated introduction of public pan-European cellular digital land-based mobile communications in the Community*, OJ L 196, 17 July 1987, pp. 0081-0084.

²⁷ *Directive 87/372/EEC of 25 June 1987 on the frequency bands to be received for the co-ordinated introduction of public pan-European cellular digital land-based mobile communications in the Community*, OJ L 196, 17 July 1987, pp. 0085-0086.

²⁸ T-Mobile launched services in 1985 and Vodafone in 1992.

²⁹ *Council Directive 91/263/EEC of 29 April 1991 on the approximation of the laws of the Member States concerning telecommunications terminal equipment, including the mutual recognition of their conformity*, OJ L 128/1, 23.05.1991, <http://europa.eu.int/ISPO/infosoc/legreg/docs/91263.html> (23 May 2003).

³⁰ *Council Resolution 93/C213/01 of 22 July 1993 on the review of the situation in the telecommunications sector and the need for further development in that market*, OJ C 213, 6 August 1993, pp. 0001-0003.

³¹ *Green Paper on a common approach in the field of mobile and personal communications in the European Union*, COM(94)145 final, 27 April 1994.

with the result of two additional mobile operators in Germany.³² On the basis of the Green Paper a Council Resolution³³ was adopted with the removal of all exclusive and special rights in the mobile sector as its key provision.

The UMTS award procedures fell into the third phase of EU regulation mainly governed by the Mobile Directive³⁴ and the Licensing Directive³⁵; both aimed at full liberalisation of the telecommunications sector with the result of two additional mobile operators in Germany and further assignment of spectrum to established mobile operators.³⁶ The Interconnection Directive³⁷ also applicable to the mobile sector guarantees interoperability, equal access and universal services and deals with the issue of mobile operators with significant market power.

In 1997, the European Commission published a communication paper on strategy and policy orientations for the further development of mobile and wireless communications (UMTS).³⁸ Subsequently, Decision No 128/1999/EC³⁹ addresses with the co-ordinated introduction of a third-generation mobile and wireless communications system (UMTS) in the Community.

As a result of the 1999 Communications Review a new regulatory framework comprised of a regulations package of six Directives was adopted in 2002. The framework deals with the convergence of different industry sectors like telecommunications, broadcasting and information technology, and needs to be implemented by the Member States by July 2003. The following four Directives of the new regulatory framework have particularly an impact on UMTS regulation:

- Framework Directive⁴⁰
- Access and Interconnection Directive⁴¹

³² Launch of services by E-Plus in 1994 and mm02 in 1998.

³³ Council Resolution 95/C 188/02 of 29 June 1995 on the further development of the mobile and personal communications sector in the European Union, OJ C 188/3, 22 July 1995, pp. 0003-0004.

³⁴ Directive 96/2/EC of 16 January 1996 amending Directive 90/388/EEC with regard to mobile and personal communications, OJ L 020, 26 January 1996, p. 0059-0066.

³⁵ Cf. n. 9.

³⁶ UMTS new entrants: MobilCom Multimedia and Quam.

³⁷ Cf. n. 8.

³⁸ Communication from the Commission to the Council, the European Parliament, the economic and social Committee and the Committee of the regions - Strategy and policy orientations with regard to the Further development of mobile and wireless communications (UMTS) - Outcome of the public consultation and proposals for creating a favourable environment, COM/97/0513 final, 1997; see: Resolution on the further development of mobile and wireless communications, OJ C 056, 23 February 1998.

³⁹ Cf. n. 1.

⁴⁰ Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services, OJ L 108, 24 April 2002, pp. 0033-0050.

- Authorisation Directive⁴²

The Framework Directive sets out the enlarged scope of the new regulation and deals with the management of radio frequencies and the promotion of harmonisation of spectrum use in accordance with the Radio Spectrum Decision⁴³. The Access and Interconnection Directive, which is especially important for MVNOs, promotes a pro competitive and harmonised framework for network infrastructures as well as the interoperability of services. The Authorisation Directive aims to simplify market access procedures and deals with the right to use radio frequencies as well as with the conditions, limitation procedures and fees.

3.2 Regulation

As opposed to legislation regulation refers to sector specific rules within a particular industry. The telecommunications sector in Germany is governed by RegTP, the German National Regulatory Authority.

RegTP was established in 1998 on the basis of § 66 (1) TKG as a higher federal authority within the scope of the Federal Ministry of Economics. RegTP is a relatively independent authority, subject solely to the supervisory powers of the Federal Ministry of Economics and to the law.

The most important duties of RegTP in the UMTS sector include the regulation of access to the market and the organisation of frequencies. Accordingly, RegTP granted UMTS licences on the basis of an auction procedure which took place from 31 July 2000 until 18 August 2000. Prior to the auction itself, the President's Chamber of RegTP ruled on 10 May 1999 on the procedure for the award of licences for UMTS, laying down the choice of proceedings and the general determinations and rules for licence award as provided for by §10 and 11(1) and (2) of the Telecommunications Act 1996.⁴⁴ Additionally, RegTP ruled on 18.02.2000 through its President's Chamber a general administrative order under § 73 section 2 TKG in conjunction with § 11 (4) sentence 2 subparas 1 to 4 TKG, determining the rules for the award of licences for the Universal Mobile Telecommunications System (UMTS)/International Mobile

⁴¹ Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities, OJ L 108, 24 April 2002, pp. 0007-0020.

⁴² Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services, OJ L 108, 24 April 2002, pp. 0021-0032.

⁴³ Decision No 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community, OJ L 108, 24 April 2002, pp. 0001-0006.; this Decision aims at providing a legal framework for a co-ordinated and harmonised efficient use of radio spectrum throughout the EU. See also: chapter 4.2 of the essay.

⁴⁴ RegTP Official Gazette, n. 18.

Telecommunications-2000 (IMT-2000).⁴⁵ It also imposed licence conditions on the licensees. Additionally, RegTP drew up an UMTS/IMT-2000 frequency channel plan and awarded the frequencies to the licensees.

3.3 Licence Conditions

Licence conditions imposed by RegTP on telecommunications operators are both designed to regulate the individual relationship between the licensee and RegTP, setting out rights and obligations, and to promote the policy objectives set out in the Telecommunications Act 1996.

Figure 3 shows an overview of the six UMTS licensees in Germany, their licence expenses, infrastructure sharing and national roaming agreements and the current situation.

Figure 3: UMTS licensees

UMTS/IMT-2000 Licensees	Licence Expenses (approx.)	Infrastructure Sharing	National Roaming	Current Situation
GSM Incumbents		T-Mobile & O2	T-Mobile & O2	roll-out and coverage obligations will be fulfilled
T-Mobile	€8.5bn			
Vodafone D2	€8.4bn			
e-plus 3G	€8.4bn			
O2	€8.4bn			
New Entrants				suspended
MobilCom Multimedia	€8.4bn			
Quam	€8.4bn			

The following description of the licence conditions is based on the Model Licence⁴⁶ attached to the Ruling by the President's chamber on 18 February 2000 on the determinations and rules for the award of UMTS licences. The Model Licence was made available before the actual award of the licences and was designed to provide a certain degree of legal certainty for future licensees.

⁴⁵ RegTP Official Gazette, No. 4, 23 February 2000, pp. 564-577.

⁴⁶ Cf. n. 48, appendix 1.

3.3.1 The scope of licence

The licence applies to the operation of transmission paths for publicly available UMTS services by the licensee or other parties on the territory of the Federal Republic of Germany. The system needs to be capable of supporting seven minimum characteristics.⁴⁷

- Multimedia capability
- Access to the Internet
- High quality speech transmission
- Service portability
- Operation in one seamless environment
- New terrestrial air interface
- Evolution of existing core networks.

Multimedia capability describes new multimedia services and is designed to define a new product market with special requirements which is different from other licensed markets, e.g., GSM.⁴⁸

The package orientated IP-Protocol is especially suitable for data traffic with respect to broadband mobile data services.⁴⁹ Thus, access to the Internet is regarded as a significant factor for the introduction of UMTS broadband services.⁵⁰

While the capability to deliver data services in an advanced way distinguishes UMTS from GSM services, the transmission of speech will clearly remain one of the key services offered. Thus, the licensees are required to guarantee a high quality of speech transmission.⁵¹

Service portability refers to a system requirement that enables the future UMTS user to access services, e.g., online banking and other services which are currently only accessible over the fixed line network.⁵²

In addition, licensees are required to create a seamless operational environment by guaranteeing compatibility with other mobile networks and services, unrestricted roaming with

⁴⁷ Decision No 128/1999/EC, n. 1.

⁴⁸ *Ruling of 18 February 2000 by the President's Chamber on the Determinations and Rules for the Award of Licences for the Universal Mobile Telecommunications System (UMTS)/International Mobile Telecommunications-2000 (IMT-2000); Third Generation Mobile Communications*, http://www.regtp.de/en/reg_tele/start/in_05-08-01-00-00_m/index.html (6 June 2003), p. 51.

⁴⁹ "Ruling of 18 February 2000", n. 48, p. 52.

⁵⁰ Ibid.

⁵¹ "Ruling of 18 February 2000", n. 48, p. 53.

⁵² Ibid.

other mobile networks, including GSM networks and other UMTS/IMT-2000 networks as well as interoperability of networks within the IMT-2000 product family.⁵³

A new terrestrial interface is required to offer access to all services, e.g., wireless multimedia broadband, for which the capability of an asymmetric traffic must be realised.⁵⁴

The demand to further develop the already existing infrastructure should guarantee the efficient use of the existing infrastructure, especially GSM networks⁵⁵.

3.3.2 The right to operate transmission paths

The licensee has the right to operate transmission paths for public UMTS service offerings on the territory of the Federal Republic of Germany.⁵⁶

In addition to this primary right, several other rights necessary for the operation of transmission paths are granted to the licensee: the right to use public ways free of charge,⁵⁷ the right to be allocated frequencies⁵⁸ and finally the entitlement to be awarded numbers through a separate administrative act according to the respective numbering plan.

The expiry date for the licence and all accompanying rights is 31 December 2020.⁵⁹

3.3.3 Usage of mobile radio frequencies

The Licence contains an assurance by RegTP under § 38 of the Administrative Procedures Act to assign frequencies upon separate request by the licensee in accordance with § 47 (5) Sentence 1 TKG.⁶⁰ This fact highlights again that the assignment of frequencies was not the subject of the auction procedure, but, as already mentioned, the right to operate transmission paths for UMTS services.

Moreover, the licensee is exclusively entitled to use the assigned frequency blocks within the scope of the licence.

3.3.4 Revocation of licence and accompanying rights

The revocation provision in the licence only repeats the wording of § 15 TKG.⁶¹ According to this provision the licence may be wholly or partly revoked if the following circumstances occur:

⁵³ "Ruling of 18 February 2000", n. 48, p. 54.

⁵⁴ "Ruling of 18 February 2000", n. 48, p. 55.

⁵⁵ "Ruling of 18 February 2000", n. 48, p. 57.

⁵⁶ Model Licence A 2, n. 46.

⁵⁷ Model Licence A 4, n.46.

⁵⁸ Model Licence A 3, n.46.

⁵⁹ Model Licence B 1, n.46.

⁶⁰ Model Licence A 3.1, n.46.

⁶¹ Model Licence B 2, n.46.

- the licensee breaches his obligations arising from the licence or the Telecommunications Act 1996 and in particular telecommunications secrecy, data protection regulations or penal provisions,
- in the cases of § 9 (2) TKG, namely any other licence transfer to a new holder or any change in ownership of the licensee or any permission to use the licence, there is reason for denial according to § 8 (3) Sentence 1 No. 2 TKG, namely lack of reliability, efficiency or the necessary knowledge in respect of the licensee or the party permitted to use the licence.

The relinquishment of licensing rights in the case of termination of operation is not dealt with under the licence. This question needs to be addressed as in 2002 two of the licensees⁶² decided to cease their further investment in the deployment of third generation mobile communication.

The licensee under § 4 TKG has the obligation to notify the regulatory authority in writing, within the period of one month, of the termination of operation. In this case, the licensee theoretically has two options:

- return the licence or
- retain the licence despite termination of operation.⁶³

The return of licence is done through a written statement together with the return of the licence certificate to the regulatory authority.

In this context, the issue arises whether the licensee is entitled to a reimbursement of fees. Neither regulatory nor legislative provisions exist to specifically address the reimbursement of UMTS licence fees. § 21 of the Administrative Costs Act in connection with the Telecommunications Licence Fee Ordinance, under which a licensee might be entitled to claim back fees paid in excess, is not directly applicable to UMTS licence fees but only to administrative licence fees.⁶⁴ The latter are calculated for a period of 30 years to assess future administrative expenses. Therefore, they should be reduced accordingly and refunded if licences are returned early.

The UMTS licence fees were generated through an auction and exceeded by far the highest possible fee (€2.5 Mill.) under the ordinance in which case no additional administrative fee has

⁶² MobilCom and Quam.

⁶³ Piepenbrock, H-J & Schuster F (eds.), n. 4, p. 135.

⁶⁴ Piepenbrock, H-J & Schuster F (eds.), n. 4, p. 136; see also: Geppert M *et al*, *Handbuch Recht und Praxis der Telekommunikation*, Nomos, Baden-Baden, 2002, p. 214.

been charged.⁶⁵ Nevertheless, it is arguable to apply these rules to the UMTS licence fees by analogy. In the UMTS auction the minimum bids were determined as to reflect the value of radio spectrum as a publicly owned scarce resource and were calculated on the basis of § 3 of the Administrative Costs Act.⁶⁶ Therefore, this Act should also be applied when considering refund issues. The licensees might not only be entitled to the minimum bids but at least to that fee which would have been charged by administrative act had the radio spectrum not been auctioned.

RegTP refuses to reimburse fees arguing that the regulator is not to blame for business decisions taken by the licensees at the time of the auction.⁶⁷ According to M Kurth, the licensees would need to take an exceptional charge in their balance sheets.

To retain the licence despite termination of operation might be reasonable in respect of transferring the licence to another entity and thus trying to recoup the licence fees.⁶⁸ However, if the roll-out and coverage obligations are not met by the set deadline the licence will be revoked under § 15 TKG.

The return of licences to the regulator also raises the question whether the returned frequencies should be reissued. In *FCC v NextWave Personal Communications Inc.*⁶⁹ NextWave obtained spectrum licences at an FCC auction in 1996. It declared bankruptcy in 1998 and the FCC consequently revoked its licences. In 2000, a Bankruptcy Court declared void the revocation of NextWave's licences. However, the FCC re-issued the disputed licences to other carriers. Finally, the United States' Supreme Court held that the revocation of Nextwave's licences violated bankruptcy law. As a consequence of this legal dispute, the particular frequencies were blocked from use to provide services to the detriment of the involved carriers and ultimately the consumers.

Hence, RegTP might be reluctant to reissue spectrum as long as legal uncertainty as to the entitlement to licence/spectrum exists.

⁶⁵ Cf. § 16 (1) TKG.

⁶⁶ *Ruling of 18 February 2000 by the President's Chamber on the Rules for Conduct of the Auction for the Award of Licences for the Universal Mobile Telecommunications System (UMTS)/International Mobile Telecommunications-2000 (IMT-2000); Third Generation (3G) Mobile Communications*, pp. 18, 25, URL at n. 48.

⁶⁷ See interview with Mathias Kurth, President of RegTP in: Holzward G, UMTS war kein Haustürgeschäft, *Computerwoche* (2001) No. 49, 7 December, available under: <http://www3.computerwoche.de/index.cfm?pageid=267&type=ArtikelDetail&id=80105664&cfid=2368560&cftoken=67379326&nr=21&kw=> (06 June 2003).

⁶⁸ Piepenbrock, H-J & Schuster F (eds.), n. 4, p. 135.

⁶⁹ *FCC v NextWave Personal Communications Inc. et al* 537 U.S. 293 (2003); opinion available under: <http://www.supremecourtus.gov/opinions/02pdf/01-653.pdf>.

3.3.5 Roll-out and coverage obligations

The licensees have the obligation to ensure the availability of UMTS/IMT-2000 mobile radio services to at least 25 per cent of the population by no later than 31 December 2003 and to at least 50 per cent of the population by no later than 31 December 2005.⁷⁰

The coverage deadlines were set in order to ensure a prompt build out of the network after the licence award and to enable the service development as quickly as possible.⁷¹

From the regulator's point of view an extension of the set deadlines is not possible, since they are linked to the UMTS launch deadline prescribed by the EU decision.⁷² Moreover, an exemption from the coverage obligation in case that a licensee might face financial hardships has not been regarded as necessary by RegTP in its Ruling because only licensees with proven financial efficiencies and resources were qualified for the auction. Despite concerns of an unfavourable general market environment, RegTP saw no reason to provide for the reservation of the right to alter the deadlines.

3.3.6 Competitive independence of licensees

The licensee is required to retain its competitive independence for the entire period following the licence award.⁷³ For this purpose the respective licence award rules form part of the licence. Therefore, neither the licensee nor a domestic or foreign company affiliated with the licensee within the meaning of Section 15 of the Stock Corporation Act may become a service provider of network operators operating in the same relevant product and geographical market.

The following minimum specialist skills and qualifications, according to §§ 8 (3) Sentence 1 No. 2 a and Sentence 2 No. 1-3, 11 (3) TKG, are applicable after award of the licence if a licence is transferred following a potential merger or sale of the licence:

- reliability
- efficiency
- specialised knowledge and
- competitive independence.⁷⁴

⁷⁰ Model Licence B 4.1, n. 46.

⁷¹ "Ruling of 18 February 2000", n. 48, p. 58.

⁷² "Ruling of 18 February 2000", n. 48, p. 59.

⁷³ Model Licence C 2, n. 46.

⁷⁴ "Ruling of 18 February 2000", n. 48, pp. 1-2, 6-13.

The concept of competitive independence is designed to ensure an equal opportunity and workable competition under § 2 (2) No. 2 TKG and results from the fact that the number of licences has been limited according to § 10 TKG and therefore only a limited market access was available from the beginning.⁷⁵ The competitive independence of a licensee has to be certified by the Federal Cartel Office through a non-objection declaration.⁷⁶

Transfer of licences which are not compatible with the concept of competitive independence will not be eligible for approval under § 9 (1) TKG with the possible consequence of licence revocation according to § 15 TKG.⁷⁷

According to the regulator, a reliance on Competition Law for an ex post case by case analysis in a dynamic sector as the mobile communications sector is not reasonable. Therefore, clear and unambiguous ex ante rules are needed in order to avoid the creation of irreversible anti-competitive market structures.⁷⁸

3.3.7 Transfer of licence and accompanying rights, change in ownership of licensee, and merger prohibition⁷⁹

Transfer of licence and changes in ownership are generally permissible. Nevertheless, transfer of licences might raise constitutionality issues. The merger prohibition is important especially with regard to those mobile operators who are in a dominant position on the relevant market.

3.3.7.1 Transferability of licences

The transfer of a licence under § 9 (1) Sentence 1 TKG is generally possible upon written request and prior approval by the licensor.

The licence is legally transferable by assignment in accordance with §§ 398 and 413 of the German Civil Code. In this context it has to be noted that German civil law is dominated by the abstraction principle distinguishing between two types of legal acts: the transfer of ownership act and the underlying obligation act which does not have a direct effect on the constitution of a real right.⁸⁰

⁷⁵ "Ruling of 18 February 2000", n. 48, p. 9.

⁷⁶ Ibid.

⁷⁷ "Ruling of 18 February 2000", n. 48, pp. 29-30.

⁷⁸ "Ruling of 18 February 2000", n. 48, p. 30.

⁷⁹ Model Licence C 9, n. 46.

⁸⁰ For the transfer of a real right, e.g., property, in Germany, only the transfer of ownership act needs to be valid, an eventual invalidity of the obligation act, e.g., contract of sale, has no effect on it.

In terms of § 9 (1) Sentence 1 TKG only the transfer of ownership act and not the underlying causal act (sales contract) has to be approved by RegTP.⁸¹ The approval has the legal quality of a validity requirement. As provided by § 9 (1) Sentence 2 TKG, RegTP might reject approval only in cases in which it would deny a hypothetical application for a licence on competition distortion grounds under § 8 (3) Sentence 2 No. 2 TKG or in an auction procedure under § 11 (3) TKG.⁸²

Another speciality of German Telecommunications Law has to be kept in mind when discussing the transferability of licences, namely that licences and frequencies are treated differently both in respect of award and transferability.⁸³

The transferability of licences is explicitly addressed under § 9 (1) Sentence 1 TKG whereas no such provision exists regarding the transferability of frequencies. § 47 (6) Sentence 1 TKG provides, according to its explicit wording, a statutory reference to § 9 TKG only with regard to cases of a change of ownership of the licensee and not licence transfers.⁸⁴ The potential problem of creating a licence without frequencies upon licence transfer is solved by the frequency award assurance which is an accompanying right, transferred to the new licensee together with the licence.⁸⁵ As a consequence, the new licensee acquires a right towards RegTP to be awarded frequencies. RegTP would then have to revoke the old frequency award and make an assignment to the new licensee.⁸⁶

Since the UMTS licences in Germany have been awarded through an auction procedure, the question arises, whether § 9 (1) TKG is constitutional.⁸⁷

After the limitation of the number of licences and the subsequent UMTS award procedure only a limited number of bidders were allowed in the first place excluding those who were thought not to have the relevant admission requirements as discussed above.⁸⁸ Given the transferability of licences without a new award procedure, the occupational freedom and the equal opportunity of the competitors, guaranteed under Art. 12 and 3 of the German Constitution, might be violated.⁸⁹ Therefore, § 9 TKG needs to be interpreted in conformity with the

⁸¹ Mayen T, "§ 9 Wechsel des Lizenznehmers" in Scheurle K-D & Mayen T (eds.), *Telekommunikationsgesetz (TKG)*, C.H. Beck, München, 2002, marginal nos. 12-15.

⁸² See Geppert M *et al*, n. 64, p. 212.

⁸³ See: §§ 8 (5), 47 TKG and also: Hummel K, "Lizenz- und Frequenzuteilung beim Unternehmenskauf" (2000) 10 *Kommunikation & Recht* 479-85.

⁸⁴ This interpretation is backed also by the according legislation history; see: Hummel K, n. 83, p. 483.

⁸⁵ Cf. Hummel K, n. 83, p. 484.

⁸⁶ "Ruling of 18 February 2000", n. 48, p. 85.

⁸⁷ See to this problem: Mayen T, n. 81, marginal nos. 49-51.

⁸⁸ Ch. 3.3.6.

⁸⁹ Mayen T, n. 81, marginal nos. 49 -51; Hummel K, n. 83, p. 484.

constitution, allowing in these cases a licence transfer only if the interest of the transferee outweighs the competitor's equal opportunity interests.⁹⁰

Hence, it is argued, that in accordance with the transfer praxis of taxi concessions,⁹¹ the licence transfer should only be allowed together with the whole undertaking or an essential part of it.⁹²

According to another opinion, it should be distinguished between the auction procedure on and the competitive bidding procedure, allowing the transfer of an "auction licence" on the grounds that it lies in the very nature of an auction to have the licence awarded to the highest bidder and therefore bearing the immanent intention of a licences trading in it.⁹³ Instead, licences awarded after a competitive bidding procedure should not be transferable because they were awarded on the grounds of their knowledge and skills.⁹⁴

The second opinion is favourable with regard to the isolated transfer of licences as a means to recoup the licence fees although from a constitutional point of view it remains doubtful.

3.3.7.2 Change of ownership of licensee

A change of ownership of licensee may occur through a disposition of shares with a notification obligation generally from 10 per cent on with regard to corporate bodies.⁹⁵ With respect to partnerships, every change of the personally liable partner needs to be notified.

The notification of change of ownership initiates an ex post verification of the licence award requirements under §§ 8 (3), 11 (3)-(4) TKG that have to be met by the new licensee.⁹⁶ There is no difference in the examination extent from the approval procedure under § 9 (1) TKG.⁹⁷

3.3.7.3 Merger Prohibition

The merger prohibition under § 32 TKG applies to licensees in a dominant position on the relevant market according to § 19 (2), (3) of the Act against Restraints of Competition. It constitutes a sector specific merger control regulation which supplements the merger control provisions under §§ 35-43 of the Act Against Competition Restraints.

According to § 32 TKG, a licensee holding a dominant position on the relevant market may be required by the licensor to refrain from a merger with a licensee acting on the same product and geographic telecommunications market.

⁹⁰ Mayen T, n. 81, marginal nos. 49-51.

⁹¹ Owners of taxi concessions who intend to retire and sell of the whole or a part of their undertakings are allowed to transfer their concessions in connection with this sale in order to enable them to recoup their professional life.

⁹² Mayen T, n. 81, marginal nos. 49-51.

⁹³ Hummel K, n. 83, p. 484.

⁹⁴ Ibid.

⁹⁵ Hummel K, n. 83, pp. 480-481.

⁹⁶ See: "Ruling of 18 February 2000", n. 48, p. 85.

⁹⁷ Ibid.

Whether an undertaking is dominant on the relevant market is determined by a set of factors laid out in § 19 (2) of the Act against Restraints of Competition:

- there is no substantial competition or
- the undertaking has in relation to its competitors a paramount position which is assessed by different criteria, e.g.: market share, financial power, access to supplies or markets

Under § 19 (3) of the same Act a licensee is presumed to be in a dominant position if it has a minimum market share of one third. However, the licensee meeting this requirement, is able to refute the statutory supposition, by showing that significant competition exists or is expected on the relevant market.

While the German UMTS market is only about to be established, there can be no doubt that the market dynamics that already exist in the current 2G/2.5G markets will be transferred to the 3G market. More specifically, T-Mobile and Vodafone who lead the German 2G/2.5G market with market shares of around 40 per cent respectively are best positioned to capture a similar market share for UMTS services given the competitive advantage of their large existing customer bases and their financial strength.

However, RegTP does not regard these two mobile operators as being in a dominant position on the UMTS market in accordance with §§ 32 TKG and 19 of the Act against Competition Restraints as it does not recognise any dominant operators on the 2G markets.⁹⁸ The mobile market currently has a sufficiently competitive character that does not give rise to specific regulation.⁹⁹

Under these circumstances, a merger involving either of the two market leaders would, from a telecommunications law perspective, not generally be forbidden but will be subject to merger control regulation under §§ 35-43 of the Act against Restraints of Competition.

Regardless of these issues it should be considered that no entity is allowed to have more than one licence, due to the licence requirement of competitive independence as discussed above.

⁹⁸ Cf. "Ruling of 18 February 2000", n. 48, p. 47.

⁹⁹ See: Groebel A, "Why Germany does not regulate wireless carriers-under which circumstances should wireless carriers be regulated?" (2002) 6 *Computer and Telecommunications Law Review* 153-156, pp. 155-156; Witte M, "§ 32 Zusammenschlußverbot", n. 86, marginal nos. 13-14.

3.3.8 Infrastructure Sharing

RegTP decided not to include any infrastructure sharing obligations into the Model Licence because the Telecommunications Act 1996 does not explicitly provide such an obligation. Therefore, such agreements are left to the commercial negotiation of the parties under general civil law.

Nonetheless, an infrastructure sharing obligation might be imposed on an operator that abused a dominant position under § 19 (4) of the Act against Restraints of Competition.¹⁰⁰

3.3.9 Network access obligations

Specific network access obligations or obligations to realise the MVNO business model are not contained in the licence. This question is therefore left to the general provisions of the Telecommunications Act 1996, the respective ordinances and the respective parties to negotiate agreements on a commercial basis.

Network access is defined as the physical and logical connection of terminal equipment or other equipment to a telecommunications network or parts thereof as well as the physical and logical connection of a telecommunications network to another telecommunications network or parts thereof for the purpose of obtaining access to functions of such telecommunications network or to the telecommunications services provided via such network.¹⁰¹

Under § 4 (1) of the Telecommunications Customer Protection Ordinance¹⁰² the licensee has the obligation to offer services to service providers on a non-discriminatory basis and to allow them to market and offer these services in their own name and for their own account. Furthermore, the licensees are required to provide conditions that are not less favourable than for their own marketing organisations or affiliated companies, unless objectively justified. However, this obligation does not encompass the requirement to provide access to the network infrastructure itself, i.e., to access the intelligent network in order to make implementations for own products.¹⁰³

¹⁰⁰ "Ruling of 18 February 2000", n. 48, p. 48.

¹⁰¹ § 3 No. 9 TKG.

¹⁰² See reference to this provision in the Model Licence C 15, n. 46.

¹⁰³ "Ruling of 18 February 2000", n. 48, p. 46.

Operators in a dominant position on the relevant market under § 19 (2), (4) of the Act against Restraints of Competition are required to provide access to their telecommunications networks or parts thereof via general network access or special network access.¹⁰⁴

3.3.10 National Roaming

There exists no specific national roaming obligation for UMTS licensees. Therefore, GSM operators are not required to enter into national roaming agreements with new entrants. This follows existing regulatory practice in Germany. Nevertheless, national roaming agreements are allowed on a voluntary basis.

National Roaming is not defined by the Telecommunications Act 1996 but deals with the use by one mobile operator's customer of another mobile operator's network to make or receive calls in areas out of range of the signed up operator, using the functions of the host network.¹⁰⁵ In this way the customer is able to use an additional network, allowing nation wide accessibility.¹⁰⁶

Nevertheless, national roaming agreements are allowed under the current regulatory framework, provided they comply with general competition law and the concept of competitive independence.¹⁰⁷

3.3.11 Spectrum Trading

As in most other Member States, the current regulatory regime in Germany does not allow spectrum trading.¹⁰⁸ Accordingly, RegTP stated that under the current legislation spectrum trading would be unlawful.¹⁰⁹

3.4 Impact of the regulatory and legislative framework on market dynamics

Before analysing the impact of the above legislative and regulatory framework it is necessary to define market dynamics for the purpose of this work.

From an economic point of view, market dynamics is concerned with the study of how a certain specified market changes over time due to exogenously and endogenously determined

¹⁰⁴ § 35 (1) TKG.

¹⁰⁵ "Ruling of 18 February 2000", n. 48, p. 38.

¹⁰⁶ Ibid.

¹⁰⁷ "Ruling of 18 February 2000", n. 48, p. 42.

¹⁰⁸ McKinsey & Company, n. 23, p. 24.

¹⁰⁹ See: ABN AMRO report, Gordon S et al, *Pan European Telecoms, European Regulation Country Profiles*, July 2002, p. 12.

factors.¹¹⁰ It deals with changes in the market structure (concentration), concerning the numbers of competitors, and in the market development (penetration), concerning the number of mobile users per total population.¹¹¹

The essay will focus on the impact of the licensing process and the relevant licence conditions on the market structure in Germany.

3.4.1 Impact on market structure

The main factors that have shaped the market dynamics for UMTS operators in Germany include the chosen licensing method, the number of licences assigned, the corresponding licence fees and the coverage requirements.¹¹²

In order to stimulate and enhance competition on the UMTS market, RegTP awarded the licences through an auction, allowing a relatively high number of candidates to bid for a licence. As a consequence of exorbitant revenue expectations for 3G services at the time of the auction in July/August 2000, coupled with the apparent desire of mobile operators to secure their share of the “German 3G pie”, the auction process reflected the competitive nature of the German mobile market. As a result the huge amount of €50bn in licence fees has been generated. The successful bidding parties included the four existing GSM operators and two greenfield new entrants.

However, the high amount of up front licence fees coupled with already stretched balance sheets and a subsequent change in expectations for the growth and profitability of 3G services resulted in a severe drop in the market capitalisation of European telecom operators and tighter conditions in debt markets and thus a paramount need to preserve capital.

Consequently, operators pared back dramatically their investments into existing and 3G networks. The latter was delayed also by a number of technological problems that further clouded the prospect of near term revenue growth from 3G services.

Specifically, with respect to the German market, both new entrants Quam and Mobilcom have effectively stopped any investment into their 3G networks. While still in possession of their licences, the intention is to monetise at least a portion of the fees paid for the licenses.

The award procedure aimed at maximising the return for radio spectrum as an efficient way of valuing this public good. In retrospect, while the choice to award two licences to new entrants

¹¹⁰ Black J, *Dictionary of Economics*, Oxford University Press, 1997, p. 134.

¹¹¹ See: McKinsey & Company, n. 23, p. 29.

¹¹² See: McKinsey & Company, n. 23, pp. 9-13.

intended to grant equal opportunity and workable competition, it can be argued that the exorbitant level of licence fee has helped to create the opposite.¹¹³

The negative impact is especially apparent for those operators without a developed infrastructure and client base at the time of the auction as they were burdened with higher investment costs. In comparison to greenfield operators, existing GSM network providers have a relevant competitive advantage based on their ability to use their established GSM-infrastructure and market position, their well-known trademarks and lastly their existing client base which can be used in the course of the deployment of UMTS services.¹¹⁴

Thus, competition conditions have been distorted to the disadvantage of newcomers.

3.4.2 Impact on market development

Given the delay in 3G spending and the reduced number of competitors, the regulatory goal for the provision of UMTS services throughout Germany at affordable prices, within the meaning of § 2 (2) no. 3 TKG will not be achieved soon.¹¹⁵

As a consequence, the user's interests safeguarded by § 2 (2) No. 1 TKG and the constitution¹¹⁶ will not be met in the short term, since the high up front costs of licence fee and roll-out costs could eventually result in higher service prices.

3.5 Need for amendments of the underlying conditions

The legislative and regulatory framework and the impact of some key provisions on market dynamics raises the question of how licence conditions could be amended or aligned according to the current UMTS market situation while keeping in mind the achievement of the ultimate regulatory goals.

One possible measure to reduce the financial risk for mobile operators is to limit or relax roll-out and coverage obligations in the first period of the UMTS introduction.¹¹⁷ Thereby, the investments can be reduced and accordingly aligned to market demand.¹¹⁸

In light of industry restructuring, mergers, joint ventures and other agreements, concerted practices between mobile operators become likely.¹¹⁹ The competitive independence

¹¹³ See: Degenhardt C, "Versteigerung der UMTS-Lizenzen: Telekommunikationsrecht und Telekommunikationsverfassungsrecht" (2001) 1 *Kommunikation & Recht* 32-41, p. 39.

¹¹⁴ See: Degenhardt C, n. 113, p. 39.

¹¹⁵ Ibid.

¹¹⁶ Art. 87f (1) of the German Constitution is the basis of the Telecommunications Act 1996 giving the state the competency to provide for suitable and sufficient telecommunications services throughout the country.

¹¹⁷ McKinsey & Company, n. 23, p. 71.

¹¹⁸ Ibid.

requirement does not per se hinder such agreements, since it is not designed to generally forbid any agreements between mobile operators as long as equal opportunity and workable competition are guaranteed. Therefore, a lenient attitude by competition authorities is recommended to facilitate market consolidation according to what is sustainable within a market.¹²⁰

Consolidation between smaller mobile operators should be facilitated by allowing the merging entities to give back one licence and the respective frequency blocks for at least a partial reimbursement of fees. Recent press reports have suggested that a combination of KPN's E-Plus subsidiary and MMO2's German subsidiary O2 Germany is being discussed by both operators. Even though a merger of the two entities would reduce the number of market players to three, and would, thus, increase the oligopolistic structure of the market, it could be argued that the increased market share of a combined entity would enhance competition by creating a more powerful operator, which would be able to compete more effectively with the leading operators Vodafone and T-Mobile.

Additionally, allowing spectrum trading in the UMTS sector would benefit competition through the creation of innovative services.

An extension of the licence term has not been addressed yet by the regulator. Nevertheless, an extension from the current licence term of 20 years would be reasonable, since German mobile operators are not likely to recoup their high UMTS investments within the set term given the revised down low demand for UMTS services.¹²¹ In any case, future spectrum assignments should use certain licence fee payment schedules adjusted to the according market situation to avoid financial instability through high up front costs.¹²²

Figure 4 below shows an overview of the licence conditions, their impact on market dynamics and respective need for amendments.

¹¹⁹ Given the increased economies of scale and the dominance of T-Mobile and Vodafone in the German mobile market (own a combined 80 per cent market share) a merger between E-Plus and O2 Germany should be seen as a likely option.

¹²⁰ See: McKinsey & Company, n. 23, p. 73.

¹²¹ McKinsey & Company, n. 23, p. 45.

¹²² McKinsey & Company, n. 23, p. 71.

Figure 4: Overview Licence Conditions, Impact on Market Dynamics and Need for Amendments

Licence Conditions	Details	Impact on Market Dynamics	Need for amendments
Right to operate transmission paths	<ul style="list-style-type: none"> - right to use public ways free of charge - right to be allocated frequencies - entitlement to be awarded numbers 		
Use of mobile radio frequencies	<ul style="list-style-type: none"> - assurance to be assigned frequencies - licensee exclusively entitled to use frequencies 		
Revocation	<ul style="list-style-type: none"> - breach of licence obligations - licence transfer/possible permission denial 		
Return of licence	- RegTP: no reimbursement of fees		
Roll-out and coverage obligations	<ul style="list-style-type: none"> - 25% (31.12.2003) - 50% (31.12.2005) 	yes	relaxation of coverage requirements
Competitive Independence of licensees	<ul style="list-style-type: none"> - throughout the term of the licence - transfer of licences must be compatible with this concept 		less stringent attitude in competition matters
Transferability of licences and accompanying rights	<ul style="list-style-type: none"> - generally possible - notification/approval procedure 		
Change of ownership	<ul style="list-style-type: none"> - notification - no multiple UMTS licences - no foreign ownership restriction 		
Merger prohibition	- only with regard to operators with a dominant position		lenient attitude in competition matters (Art. 81, 82 EC Treaty)
Extendability of licence	licence term: 20 years		extension of licence term allows for more years of profitability
Payment/Fees	<ul style="list-style-type: none"> - licence fee covered by auction fee in one payment - numbering fee under ordinance - frequency fee covered by auction fee 	Yes	extended payment schedules (for future)
Interconnection offer obligation	yes under § 35 (5) sentence 1 TKG and relevant ordinance		
Network sharing	no obligation imposed on operators but encouraged by RegTP		
Network access	<ul style="list-style-type: none"> - to service providers in different markets (competitive independence) - no access to the network infrastructure itself 		
National roaming	no obligation, but allowed to provide national roaming under commercial terms		national roaming obligation to allow new entrants to position themselves on the market and to decrease initial roll-out effort
Spectrum trading	currently not allowed		change in the law pending

4. Co-operation Possibilities

Co-operation between mobile operators can take the form of infrastructure sharing agreements, spectrum trading and agreements with MVNOs. They allow the achievement of higher economies of scale, the improvement of service offerings through, e.g., an increase in coverage.

4.1 Infrastructure sharing agreements

As outlined above, due to the high costs involved, tighter credit conditions and technical problems, some operators realised that they might have difficulties in complying with the coverage obligations.

Already at an early stage, after the end of the auction operators realised that co-operation in the field of infrastructure sharing might be one possible solution to reduce the high roll-out costs with the additional benefit of a quicker network roll-out and a more limited environmental impact.¹²³

4.1.1 Definition

When discussing infrastructure sharing agreements one needs to distinguish between the sharing of physical parts of the infrastructure like sites, masts, antennas, cables and combiners on the one hand and the sharing of transmission, connection and network technology on the other hand.¹²⁴ Therefore, it can be differentiated between the passive elements of a network, which are not directly involved in the transmission process like masts and sites such as SSCs (Site Support Cabinets), the core network representing the intelligent part of the network like MSC's and various databases and finally the UTRAN with its RNCs, Node Bs (base stations) and antennas.¹²⁵

Network sharing is generally possible in four ways:

- site sharing (share of space on masts and sites)
- UTRAN sharing
- core network sharing
- frequencies sharing (spectrum pool).¹²⁶

¹²³ See: Cap Gemini Ernst & Young Telecom Media Networks report, *Saving Costs on 3G – Rollout: The Network Sharing Alternative*, pp. 1-5, http://www.cgey.com/tmn/pdf/Network_Sharing.pdf (27 May 2003).

¹²⁴ Jenny V, "Teil 2 - Frequenzzuteilung und Lizenzierung" in Heun S-E (ed.) *Handbuch Telekommunikationsrecht*, Dr. Otto Schmidt, Köln, 2002, part. 2, marginal nos. 332.

¹²⁵ Koenig C & Neumann A, "Gemeinsame Infrastrukturnutzung beim Aufbau eines UMTS-Netzwerks und das Gebot wettbewerblicher Unabhängigkeit" (2001) 6 *Kommunikation & Recht* 281-88, p. 281.

¹²⁶ European Commission Press Release IP/02/1277, *Preliminary view of the European Commission on the infrastructure sharing agreements between T-Mobile and MMO2*, Brussels, 10 September 2002.

Sharing parts of the UTRAN is especially effective, since the construction of this part of the network is the most cost intensive due to its complexity.¹²⁷

4.1.2 Legal Framework

Infrastructure sharing agreements are permissible under certain conditions as will be shown below. Generally, neither German telecommunications law nor German and European competition law prohibit co-operation between mobile operators in the form of infrastructure sharing agreements.

The requirement of competitive independence of licensees cannot generally be used as an argument to prohibit infrastructure sharing agreements. It particularly aimed at preventing the participation of entities at the auction which are not competitively independent and thus the creation of multiple licence holders. Through extending the validity of this concept to the whole licence period RegTP created the impression of the existence of an overarching concept of competitive independence.¹²⁸ This cannot be based dogmatically on German Law, since only case by case action is provided for by the Telecommunications Act 1996.¹²⁹ Moreover, the capability of entities to act independent of competitors is regarded under German competition law as a sign for a dominant position, thus contrary to that what RegTP wants to achieve through it.¹³⁰

Also the merger prohibition provision under § 32 TKG does not apply to infrastructure agreements because of its narrow requirements aiming at mergers between entities in a dominant position on the relevant market as defined in German competition law.¹³¹

An infrastructure agreement could generally fall into the applicable range of § 1 of the Act against Restraints of Competition but is unlikely to violate this provision, particularly if certain safeguards are regarded in drafting those agreements.¹³² This provision prohibits agreements between competitors, decisions of associations and concerted practices, that have as their scope or effect the prevention, restriction or distortion of competition. In infrastructure sharing agreements it is important to guarantee, that each party retains the functions control over the operation of transmission lines, no exclusivity agreements are concluded, strictly sharing-related

¹²⁷ See: Koenig C & Neumann A, n. 125, p. 281; Cap Gemini Ernst & Young, n. 133, pp. 3-4.

¹²⁸ Koenig C & Neumann A, n. 125, p. 287.

¹²⁹ Ibid.

¹³⁰ Ibid.

¹³¹ Koenig C & Neumann A, n. 125, p. 285.

¹³² Koenig C & Neumann A, n. 125, p. 288.

information is being exchanged and that each party retains its freedom of action.¹³³ It is to be noted that even if it is found that the particular agreement falls under § 1 of the Act against Restraints of Competition the exemptions under §§ 2 ff. of this Act need to be analysed, especially § 5 of the Act against Restraints of Competition dealing with rationalisation cartels.

From an European law perspective, infrastructure sharing is generally permissible as highlighted in the Interconnection Directive¹³⁴ under Art. 11 in which National Regulatory Authorities are called to encourage such agreements. Furthermore, in its communication paper, the European Commission expressed its favourable attitude towards infrastructure sharing.¹³⁵ The implication of European competition law on infrastructure sharing agreements can be seen in the case of the agreements between T-Mobile and MMO2 which have been notified with the European Commission for negative clearance under Art. 81 (1) or (2) of the EC Treaty. The Commission approved the agreement on the basis that it does not restrict competition.¹³⁶ It found that the agreement is limited to the sharing of basic parts of the network infrastructure and will lead to a faster network roll-out and a limitation of environmental impact.¹³⁷ Also the lack of exclusivity to the agreements and the safeguards put in place to prevent the exchange of sensitive information have contributed to this decision.¹³⁸

4.1.3 The view of the regulator

The competency to regulate infrastructure sharing was left entirely to the Member States. This resulted in divergent regulations and a subsequent call for harmonisation.

Germany as most other Member States has left the decision on infrastructure sharing to the parties in favour of a commercial agreement as provided in Art. 11 of the Interconnection Directive¹³⁹. However, according to the Directive, National Regulatory Authorities may intervene to resolve disputes if the parties are not able to come to an agreement. Furthermore, they also have the authority to impose infrastructure sharing agreements after an appropriate period of public consultation.

¹³³ Koenig C & Neumann A, n. 125, p. 288.

¹³⁴ Cf. n. 8.

¹³⁵ *Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions the introduction of third generation mobile communications in the European Union: state of play and the way forward*, COM(2001)141 final, p. 11, <http://europa.eu.int/ISPO/infosoc/telecompolicy/en/com2001-141en.pdf> (27 May 2003).

¹³⁶ European Commission Press Release IP/03/589, *Commission approves 3rd Generation mobile network sharing in the United Kingdom*, Brussels, 30 April 2003.

¹³⁷ Ibid.

¹³⁸ Cf. n. 126.

¹³⁹ N. 8.

As mentioned above,¹⁴⁰ RegTP decided not to include any infrastructure sharing obligations in the licence conditions.

The sharing of physical distinct infrastructure parts does not represent a renunciation of functions control per se and is thus generally permissible.¹⁴¹ This could more likely be assumed of the using of one single technology by more than one mobile operator through, e.g., one device capable of navigating more transmission networks divided only by logical links.¹⁴²

Initially, RegTP adopted a rather negative attitude towards infrastructure sharing, primarily out of a fear that the competitive independence of licensees might be endangered.¹⁴³ Later it released a thesis paper¹⁴⁴ containing a list of principles to clarify the extent to which and the technical conditions under which shared use of infrastructure is compatible with the UMTS licence conditions in light of recent technological advance.

The functions control principle as defined under § 3 No. 1 TKG plays an even more important role when discussing the permissibility of such co-operation agreements as the problem is in nature not merely one of competition law.¹⁴⁵ Both concepts but especially the functions control concept form the underlying principles of RegTP's thesis paper.

¹⁴⁰ Ch. 3.3.8.

¹⁴¹ Jenny V, n. 124, marginal nos. 335-336.

¹⁴² Ibid.

¹⁴³ "Ruling of 18 February 2000", n. 48, p. 42; Jenny V, n. 124, marginal no. 332.

¹⁴⁴ Available under: http://www.regtp.de/reg_tele/start/fs_05.html.

¹⁴⁵ See: Jenny V, n. 124, marginal no. 333; the functions control concept has been explained above in ch. 3.1.1.

Therefore according to RegTP's thesis paper, the following kinds of infrastructure sharing are permissible:

- shared use of sites, masts, antennas, cables and combiners is permitted
- shared use of SSCs is permitted
- shared use of logically distinct Node Bs in one and the same unit instead of physically distinct Node Bs at the same site under the following preconditions:
 - each licence holder independently controls his own logical Node B so that he can only operate his assigned frequencies (no spectrum pool¹⁴⁶)
 - no data exchange between licensees rather than what is necessary for the technical operation (e.g. customer data)¹⁴⁷
 - separation of operation and maintenance centres¹⁴⁸
 - operation of additional own Node Bs to guarantee the operator's planning autonomy
 - no regional division of coverage areas; a geographical division in a way that operators cover each one region upon agreement to allow each customers to use the respective geographical distinct network would violate German Competition Law, § 1 of the Act against Restraints of Competition.¹⁴⁹
- shared use of logically distinct RNCs under similar conditions as for the shared use of logically distinct Node Bs
- shared use of the core network (MSCs) is not permitted.

RegTP's thesis paper aims to provide guidance and more legal certainty for licensees when drafting their network sharing agreements.

4.2 Spectrum trading

Spectrum trading is an issue which can be discussed under the heading of efficient use of frequency spectrum. Therefore, it relates not only to spectrum allocated for UMTS services but one for all spectrum based communications. Nonetheless, the question of spectrum trading arises in connection with UMTS licences given the high capacity needs of 3G data services and

¹⁴⁶ A spectrum pool is created when different operators put together their frequency rights with the effect that the frequencies themselves are shared.

¹⁴⁷ The exchange of data related to the competitive behaviour of the licensees endangers their competitive independence.

¹⁴⁸ This precondition is designed to guarantee the functions control of licensees by separating the technical staff responsible for the operation and maintenance of the network.

¹⁴⁹ Jenny V, n. 124, marginal no. 341.

the corresponding potential risk of capacity shortfalls, at least for the larger German mobile operators. The issue of spectrum trading is further critical for the two players who effectively stalled their investments in German 3G.¹⁵⁰ Transferring the licence and selling the assigned frequencies would enable these players to recoup at least a portion of the high UMTS licence costs.

4.2.1 Definition and types of spectrum trading

Spectrum trading can be defined as the transfer of usage rights for spectrum from one user to another for the payment of a certain price. This could take the form of a total transfer of rights or a mere leasing where usage rights are transferred temporarily while the rights and obligations towards the regulator remain with the initial rights owner.¹⁵¹

Different types of spectrum trading can be distinguished according to the mode of trade, duration and extent of transaction.¹⁵² Mode of trade defines choices to the buyer with regard to ownership, reconfiguration (splitting and unification) of spectrum and change in the nature of use. Whereas duration refers to the agreed time period for the transfer, extent deals with the level of change in ownership.

Experience from countries where spectrum trading is already possible highlight not only advantages but also potential risks that need to be addressed by a National Regulatory Authority.

The following figure 5 gives an overview of general advantages and disadvantages of spectrum trading.

¹⁵⁰ MobilCom and Quam (Telefonica/Sonera).

¹⁵¹ wik-consult, Stumpf et al, Studie für das Bundesministerium für Wirtschaft und Arbeit, *Eckpunkte zur Ausgestaltung eines möglichen Handels mit Frequenzen*, Bad Honnef, November 2002, p. 73, available under: www.bmwi.de/Homepage/download/telekommunikation_post/Eckpunkte_K.pdf (06 June 2003).

¹⁵² See: wik-consult, n. 151, p. 73; Radiocommunications Agency, *Implementing Spectrum Trading, A Consultation Document*, July 2002, p. 13, available under: <http://www.radio.gov.uk/topics/spectrum-strat/consult/implementingspectrumtrading.pdf> (6 June 2003).

Figure 5: Advantages and disadvantages of spectrum trading¹⁵³

Spectrum Trading	
Advantages	Disadvantages
best use of radio spectrum through release of spare capacity to others (re-distribution)	potential loss of efficiency through interference between adjacent radio spectrum users
easier access for new services to spectrum	risk of anti-competitive behaviour through hoarding spectrum to avoid access to new entrants or other competitors
optimisation of use by balancing spectrum needs against costs	danger of windfall profits, i.e., unjustified profits gained through pure trading without any own economic activity ¹⁵⁴
consolidation (e.g. US national mobile telephone network¹⁵⁵)	
innovation through change of use	
creation of a dynamic and competitive communications market with benefits for both businesses and consumers	

4.2.2 Legal framework

Spectrum trading is a matter of international importance, since frequencies are regarded as a scarce resource which have to be dealt with not only on a national but also on an international and European basis.

The aim of the ITU (International Telecommunications Union) is to co-ordinate frequencies on an international basis to guarantee an interference free usage between different countries¹⁵⁶, the efficient use of spectrum and to safeguard that all countries have an equal-opportunity access to spectrum communication.¹⁵⁷

On an European level frequency co-ordination is conducted by CEPT (Conférence Européenne des Administrations des Postes et Télécommunications) which administers agreements on frequency usage between its members and adopts an European frequency plan.

¹⁵³ Based on the findings in: Radiocommunications Agency, n. 152, pp. 55-56, 67-70 and wik-consult, n. 151, pp. 1-3, 78-81.

¹⁵⁴ This is regarded as less likely to occur if the initial allocation of frequencies took place by way of auction while achieving a price in conformity with market conditions; see: wik-consult, n. 151, p. 16.

¹⁵⁵ According to: Radiocommunications Agency, n. 152, pp. 63-64; private radio mobile services in several US cities were being consolidated to a national mobile telephone network as a result of trading in spectrum.

¹⁵⁶ ITU divided the world into three regions: Europe and Africa, North-, Middle- and South America, Asia and Australia.

¹⁵⁷ See: wik-consult, n. 151, p. 18.

Of particular importance is Art. 9 (3)-(4) of the Framework Directive¹⁵⁸ which lifts the barriers for Member States to allow spectrum trading, but requires to provide for a minimum level of regulation. Accordingly, the intention to trade should be notified to the National Regulatory Authority (NRA), trades should be made public and NRA procedures should be followed.¹⁵⁹ Also competition should not be distorted as a result of the trading, and there should be no change of use contrary to Community measures especially where frequency use has been harmonised through the application of the Radio Spectrum Decision¹⁶⁰. The aim and scope of the Radio Spectrum Decision is to ensure co-ordination of policy approaches in the Member States in order to achieve harmonised conditions for the availability and efficient use of the radio spectrum in the internal market. A Radio Spectrum Committee¹⁶¹ will assist the Commission in this task.

Germany, as all other European countries, does not allow spectrum trading under the current legislation. This will most likely change in mid 2003 when the new European regulatory package will be implemented into national law. Therefore, § 54 of the new Telecommunications Act Ministerial Draft Bill¹⁶² which implements the above discussed Art. 9 (3) of the Framework Directive RegTP authorises RegTP to release frequencies for trading under certain conditions and after consultation of the affected parties. RegTP will be empowered to provide the procedure and the general conditions for spectrum trading. Additionally, several criteria should be considered by the regulator before deciding on the release of frequencies for trading:

- there should be a market demand for radio spectrum¹⁶³
- the current spectrum users should be prepared to sell frequencies
- no distortion of competition on the relevant product and geographic market as a consequence of spectrum trading
- compatibility of spectrum trading with initial frequency assignment procedures
- increased or at least equal efficiency of frequency usage
- compliance with international obligations of frequency usage.

¹⁵⁸ Is due to be implemented in national law in July 2003.

¹⁵⁹ "Radio Spectrum Decision", *Decision No 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community*, OJ L 108, 24 April 2002, pp.0001-0006.

¹⁶⁰ Ibid.

¹⁶¹ This Committee will have the task of adopting technical implementing measures with regard to ensuring harmonised conditions in co-operation with CEPT and taking due account of ITU's and CEPT's work.

¹⁶² Referentenentwurf TKG-E 2003 (Telecommunications Act Ministerial Draft Bill), 30 April 2003, available under: http://www.bmwi.de/Homepage/download/telekommunikation_post/TKG-RefE.pdf (7 June 2003).

¹⁶³ According to the ABN AMRO report, n. 117, p. 12, D1 and D2 are likely to disapprove the introduction of spectrum trading. However, the regulator could promote an overall approval of market participants through a successive introduction of a less extensive type of trading; see: wik-consult, n. 151, p. 79.

Furthermore, RegTP shall guarantee an open, transparent and non-discriminatory procedure through publication of the trade rules and the procedure.

Germany has no experience at all in spectrum trading because no legal grounds are yet available. Thus, the regulator will have to consider experiences from countries that already have a certain history in spectrum trading like Australia, New Zealand, the United States, Guatemala or Canada.

Generally, in these countries it can be distinguished between a primary and a secondary market for spectrum trading. The primary market involves the initial assignment of frequencies in most cases through auctions whereas the assigned frequencies are traded on the secondary market.

The nature of spectrum rights differs in the above mentioned countries.¹⁶⁴ They all deal with interference, competition and transparency issues. Australia distinguishes between spectrum access rights in the form of standard trading units and tradeable apparatus licences. New Zealand created tradeable management rights and licence rights. Finally, Guatemala introduced freely tradable explicit rights to radio frequencies and the United States provides easily transferable clearly defined usage rights.

For the UK's five UMTS operators the UK government proposed to delay the introduction of spectrum trading until three years after the first licensee's substantive launch of services in the UK to prevent the creation of legal uncertainty in the roll-out period.¹⁶⁵

4.2.3 The view of the regulator

Until now, RegTP has argued that under the current Telecommunications Act 1996 spectrum trading would be considered illegal because of an insufficient legal basis. As shown above the law will be changed and consequently RegTP will also reconsider the issue of allowing spectrum trading in Germany.

4.3 Mobile Virtual Network Operators (MVNOs)

The emergence of MVNOs is related to the scarcity of radio spectrum and the consequently limited number of mobile network operator licences.¹⁶⁶ MVNOs are founded on a business model designed as a co-operation between mobile network operators and third parties, i.e.,

¹⁶⁴ See: Radiocommunications Agency, n. 152, pp. 57-67; wik-consult, n. 151, pp. 51-70.

¹⁶⁵ Radiocommunications Agency, n. 152, pp. 3-4, 19.

¹⁶⁶ Durie R & Romer J, "The Impact of Regulation on the Mobile Marketplace – Past, Present and Future" (2002) 4 *Computer and Telecommunications Law Review* 91-96, p. 94.

telecommunications operators or non-communications companies. The importance of MVNOs lies in their ability to enhance innovation and distribution of service offerings in the mobile sector.

4.3.1 Introduction to the MVNO business model

Although there is no universally accepted definition of MVNOs there are some criteria which are largely acknowledged. MVNOs are undertakings which gain access to some parts¹⁶⁷ of the mobile network of a mobile network operator, which enable them to appear to end users as independent mobile network operators, although they do not have a licence to operate a mobile telecommunications system.¹⁶⁸ MVNOs might have different backgrounds: they can be fixed line operators, mobile operators or other companies without any connection to the communications industry.

Unlike service providers, who in fact only resell the mobile operators' services, MVNOs not only buy airtime but also offer their own value added services to the end user. This is technically achieved through interfacing their own services platforms to the host network.¹⁶⁹ In contrast to national roaming, the MVNO concept extends beyond simply handing over each others calls.

MVNOs have different streams of revenue. They bill their own customers for their contractual services and the calls originated on their "virtual" network while they also gain revenue from the interconnection fees that are paid by operators who terminate their traffic on the MVNO's network.¹⁷⁰ Their costs differ according to the amount of host's network facilities they use. This ranges from the operation of elements of the physical network infrastructure over-using only the minimum parts of the infrastructure as mentioned above and thus relying almost totally on the host network's facilities.¹⁷¹

Advantages and disadvantages of the emergence of MVNOs are shown in figure 6 below. Their key advantage is the creation of new innovative services at reasonable prices which benefit consumers. MVNOs enhance the opening up of the mobile market through allowing non-licensees to use mobile networks.

¹⁶⁷ According to Edwards J, "Mobile Virtual Network Operators – More than just a big brand" (2001) 3 *Computer and Telecommunications Law Review* 66–70, p. 66: radio transmission links which enable the operator to locate a handset and deliver the calls and transmission and switching facilities needed for interconnection.

¹⁶⁸ See: Durie R & Romer J, n. 166, p. 94; Edwards J, n. 167, p. 66; Crane T, "Mobile Virtual Network Operators: An Easy Way to Exploit the Riches of the Mobile Phone Market?" (2002) 2 *Computer and Telecommunications Law Review* 43–45, p. 43.

¹⁶⁹ Edwards J, n. 167, p. 68.

¹⁷⁰ Edwards J, n. 167, pp. 67–68.

¹⁷¹ See: Edwards J, n. 167, pp. 66–67.

Contrary to these advantages, mobile network operators who invested huge amounts of money in licence fees and infrastructure mainly fear that MVNOs will build their mobile customer base at their expenses. The creation of a new competitor within their own network might lead mobile network operators to refrain from investing in infrastructure.

Figure 6: Advantages and Disadvantages of MVNOs

Mobile Virtual Network Operators	
Advantages	Disadvantages
open up the mobile market to new entrants	concerns by mobile network operators that MVNOs would benefit at their expense
enhance competition	creation of a new competitor
consumer benefit	disincentive for infrastructure investment by mobile network operators
benefit for mobile network operators, since MVNOs increase the number of customers on the network	
ability to provide comprehensive coverage and services	
creation of innovative value added services	

From a regulatory point of view, MVNOs should be encouraged due to the mentioned advantages. Whether by imposing access obligations on mobile network operators or by leaving it entirely to commercial negotiation remains to be solved by the particular legislator or/and National Regulatory Authority.

A country's special mobile market structure, i.e., the degree of competition and the level of cost burden on mobile network operators are crucial aspects when designing a MVNO policy. Therefore, no MVNO access obligation should be imposed on operators in countries with a highly competitive mobile market and high licence and infrastructure costs.

4.3.2 Legal framework for MVNOs in Germany

The MVNO concept is not dealt with under the Telecommunications Act 1996 so that existing general concepts need to be analysed and applied accordingly. Also the new Telecommunications Act Ministerial Draft Bill does not contain provisions that are specifically related to MVNOs. Furthermore, the UMTS Model Licence does not impose an obligation on licensees to provide access to their networks of the kind necessary for a MVNO.

The Telecommunications Act 1996 distinguishes between telecommunications network operators and service providers. From this starting point it has to be analysed whether MVNOs fall into one of these categories stating their rights and obligations with regard to the realisation

of the MVNO business model.¹⁷² As already mentioned, MVNOs are not service providers in the context of the Telecommunications Act 1996, so their rights do not apply. In case MVNOs already have a fixed line or a mobile network they might have a right to interconnect under §§ 36, 37 TKG¹⁷³. Interconnection does not help to realise the MVNO model, since it facilitates only the handing over of traffic between two networks and does not allow the use of frequencies for own services. Moreover, an obligation to provide special access to the elements of the network which is needed by an MVNO applies only to mobile network operators in a dominant position under §§ 33, 35 (1)TKG¹⁷⁴. Due to the highly competitive mobile market none of the mobile operators are regarded by RegTP to be in a dominant position.¹⁷⁵ Moreover, an obligation to provide special network access might collide with the exclusive right of operators to use frequencies.¹⁷⁶

Consequently, companies that wish to become MVNO in Germany need to rely solely on commercial negotiations and arrangements with mobile network operators.

4.3.3 The view of the regulator

RegTP leaves the emergence of MVNOs entirely to the market due to its limited legal tools to intervene. A clear policy statement has not been made yet.

4.3.4 Experiences in other countries

The legislative and regulatory position in other European countries ranges from total hostility towards MVNOs to the obligation of mobile network operators to grant MVNOs access to their networks.

Italy decided not to allow MVNOs access to 3G for at least 10 years.¹⁷⁷ Generally, Scandinavian countries developed a positive attitude towards MVNOs which is most likely because these countries have fewer competitors and lower licence fees. Denmark and Ireland provide mandatory access for MVNOs. Similarly in Sweden GSM operators are obliged to lease excess capacity to MVNOs. Finland encourages the emergence of MVNOs. Norway decided against an obligation to provide network access to MVNOs.

¹⁷² See: Kurth M, Speech, *Mobile Virtual Network Operators – Regulatory Perspectives in Germany*, Rome, 20 September 2001, <http://www.regtp.de/aktuelles/reden/02263/> (6 June 2003).

¹⁷³ §§ 16 (2) Referentenentwurf TKG-E 2003, n. 162.

¹⁷⁴ § 16 (1) Referentenentwurf TKG-E 2003, n. 162.

¹⁷⁵ Ch. 3.3.7.3.

¹⁷⁶ Cf. Kurth M, n. 172.

¹⁷⁷ Durie R & Romer J, n. 166, p. 95.

The most successful MVNO world-wide is Virgin mobile which was created by way of a joint venture with One2One. Its success is mainly derived from the use of its powerful brand, the targeting of its existing customer base and the use of its extensive retail structure and marketing skills.

5. Conclusions

This essay analysed the current state of third generation mobile communication in Germany in view of the interpretation of the legislative and regulatory conditions to allow 3G players to efficiently address the main issues, i.e., consolidation and co-operation.

Third generation mobile communication is of key importance to the creation of a knowledge-based economy in an information society as it enhances the citizen's access to information regardless of location and borders. Thus, it was of paramount importance to find consistent decisions with regard to the legislative and regulatory framework concerning the UMTS roll-out.

The legislative authorities in Germany are the Telecommunications Act 1996, several ordinances adopted on the basis of this Act, the Act against Restraints of Competition and European law. In terms of regulation, the UMTS licence conditions are key determining factors.

Whereas the Telecommunications Act 1996 sets out basic rules for telecommunications operators, competition law provisions address issues of market dominance. The interpretation of Arts. 81 and 82 of the EC Treaty are important for assessing the legality of cross boarder agreements between mobile operators.

The scope of the UMTS licence specifically determines the minimum system requirements.

The licensees have the right to operate transmission paths and to use separately awarded radio spectrum. In certain circumstances RegTP is entitled to revoke the licence. In case licences are returned, RegTP refuses to reimburse fees although the Administrative Costs Act might provide such a remedy. Certain roll-out and coverage deadlines are unlikely to be changed despite obvious difficulties of some mobile operators to cope with them. In terms of market consolidation, the requirement of competitive independence of licensees ultimately aims at preventing one mobile operator from holding more than one licence. Licences are generally transferable although issues of constitutionality might arise in view of the limitation of the number of UMTS licences. The award of frequencies takes place through a separate administrative act. Since, no dominant operator currently exists on the mobile market, mergers between licensees are only subject to merger regulation. The UMTS licences do not contain any provision which

specifically addresses the issues of infrastructure sharing, network access and national roaming. Finally, spectrum trading is not allowed under the current legislation but this will change with the adoption of the new Telecommunications Act.

The interpretation of the legislative and regulatory framework allows the following conclusions in terms of their impact on market dynamics and in terms of market consolidation.

The high up front licence fees and the payment method constraint the operators' ability to fund the build out of the UMTS infrastructure. Especially the new entrants had to reconsider their business models as market expectations with regard to the profitability of UMTS services were revised down. This had an impact on the market structure, since the new entrants were ultimately forced to withdraw from the market. Thus, the regulator's desire to increase the number of competitors was not achieved. In any case, funding constraints at the telecommunications operators, which are also a reflection of the acquisition spree in the late 90's will lead to slower development of the UMTS market. When looking at the current market structure a merger between the smaller mobile operators has become more likely and is generally not prohibited under the German legislative and regulatory provisions.

In light of the above discussed issues amendments of licence conditions could be a means to facilitate the licensees financial burden. These could include a relaxation of roll-out and coverage requirements commensurate to market demand, a less stringent attitude by regulatory and competition authorities towards consolidation, the extension of the licence term and the allowance of spectrum trading. However, so far, RegTP has not shown its intention to move in any of these directions.

In terms of co-operation between mobile operators, infrastructure sharing is allowed under the current regulatory provisions as long as the parties to the agreement remain legally and operationally independent. Spectrum trading, would especially enable the two retreated operators to sell their frequencies and in this way recoup at least a part of the licence fees. German telecommunications law does not hinder the establishment of MVNOs. However, future MVNOs will have to rely solely on voluntary commercial agreements with mobile operators willing to provide the required access to their networks.

Today, just before the roll-out of UMTS services, there remain a number of issues that are open not only with regard to the licence terms. Looking into the future, these technical, operational

and financial issues together with the ultimate demand of the consumer for UMTS services will determine the success or the failure of this new generation of mobile communication.

Abbreviations

2G	Second generation
3G	Third generation
CEPT	Conférence Européenne des Administrations des Postes et Télécommunications
FCC	Federal Communications Commission (US)
GSM	Global System for Mobile Communication
GWB	Gesetz gegen Wettbewerbsbeschränkungen (Act against Restraints of Competition)
IMT	International Mobile Telecommunications
IP	Internet Protocol
MGW	Media gateway
MSC	Mobile Switching Centre
MVNO	Mobile Virtual Network Operator
NRA	National Regulatory Authority
ONP	Open Network Provision
PSTN	Public Switched Telephone Network
RegTP	German Regulatory Authority for Telecommunications and Posts
RNC	Radio Network Controller
SMS	Short Message Service
SSC	Site Support Cabinet
TKG	Telekommunikationsgesetz (Telecommunications Act 1996)
UMTS	Universal Mobile Communication
UTRAN	UMTS radio access network
WCDMA	Wide Code Division Multiple Access

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